

In re Patent Application of
BARDWELL
Serial No. 10/081,870
Filed: FEBRUARY 22, 2002

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In the Claims:

This listing of claims replaces all prior versions or listings in the application.

1. (Currently amended) A method for storing biometric information on a token comprising a magnetic storage medium, the method comprising:

capturing a biometric image and generating therefrom digital pixel data for an array of image pixels;

selecting a plurality of ~~spaced-apart~~ non-contiguous sets of image pixels from the array of image pixels, each non-contiguous set of image pixels comprising a ~~series~~ plurality of consecutive and colinear image pixels;

processing respective sets of digital pixel data for the selected ~~spaced-apart~~ non-contiguous sets of image pixels to produce biometric data; and

storing the biometric data on the magnetic storage medium of the token.

2. (Currently amended) The method according to Claim 1, wherein capturing the biometric image comprises using a biometric sensor having a sensing area; and wherein selecting the plurality of ~~spaced-apart~~ non-contiguous sets of image pixels comprises selecting a reference set of image pixels based upon a predetermined location on the sensing area, and selecting at least one other set of image pixels a predetermined distance from the predetermined location.

3. (Original) The method according to Claim 2, wherein the location of the reference set of image pixels is also stored on the magnetic storage medium.

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4. (Original) The method according to Claim 1, wherein capturing the biometric image comprises capturing multiple biometric images until a preferred biometric image is captured based upon an image quality threshold.

5. (Canceled).

6. (Original) The method according to Claim 1, wherein the biometric information is based upon a fingerprint; and wherein capturing the biometric image comprises capturing the biometric image using a fingerprint sensor.

7. (Original) The method according to Claim 1, wherein the token comprises a card corresponding to the ISO/IEC 7810 standard and the magnetic storage medium comprises a magnetic stripe having three tracks in accordance with the ISO/IEC 7811 standard; and wherein storing the biometric data comprises storing the biometric data on the third track.

8. (Original) The method according to Claim 1, wherein the token comprises a generally rectangular substrate.

9. (Original) The method according to Claim 1, wherein the token comprises at least one of an access card, credit card, debit card, frequent flyer card, driver's license card, identification card and smart card.

10. (Currently amended) A method of regulating the use of a token, the token comprising a magnetic storage medium

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having biometric data of an authorized token user stored thereon, the biometric data comprising selected ~~spaced-apart~~ non-contiguous sets of image pixels from an array of image pixels of an enrollment biometric image, each non-contiguous set of image pixels comprising a ~~series~~ plurality of consecutive and colinear image pixels, the method comprising:

capturing a verification biometric image and generating digital pixel data for an array of image pixels from the verification biometric image;

decoding the biometric data stored on the magnetic storage medium of the token; and

comparing the ~~spaced-apart~~ non-contiguous sets of image pixels from the decoded biometric data with the digital pixel data for the array of image pixels from the verification biometric image to determine if the token holder is the authorized token user.

11. (Currently amended) The method according to Claim 10, wherein capturing the verification biometric image comprises using a biometric sensor having a sensing area; and wherein comparing the ~~spaced-apart~~ non-contiguous sets of image pixels comprises a bit by bit comparison of one of the ~~spaced-apart~~ non-contiguous sets of image pixels from the magnetic storage medium with the array of image pixels from the verification biometric image beginning at a first scanline and continuing to a last scanline until a match is found.

12. (Canceled).

13. (Original) The method according to Claim 10, wherein the biometric information is based upon a fingerprint;

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and wherein capturing the biometric image comprises capturing the biometric image using a fingerprint sensor.

14. (Original) The method according to Claim 10, wherein the magnetic storage medium comprises a magnetic stripe having three tracks in accordance with the ISO/IEC 7810 and 7811 standards; and wherein the biometric data is stored on the third track.

15. (Currently amended) A method of regulating the use of a token, the token comprising at least one of an access card, credit card, debit card, identification card and smart card, and including at least a magnetic storage medium thereon, the method comprising:

enrolling an authorized token user by

capturing a first biometric image and
generating therefrom first digital pixel data for a
first array of image pixels,

selecting a first plurality of ~~spaced-apart~~
non-contiguous sets of image pixels from the first
array of image pixels, each non-contiguous set of
image pixels comprising a ~~series~~ plurality of
consecutive and colinear image pixels,

processing respective sets of digital pixel
data for the first plurality of selected ~~spaced~~
~~apart~~ non-contiguous sets of image pixels to produce
enrollment biometric data, and

storing the enrollment biometric data on the
magnetic storage medium of the token; and
verifying an identity of a token holder presenting
the token by

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capturing a second biometric image and
generating therefrom second digital pixel
data for a second array of image pixels, and
comparing the second digital pixel data
with the first plurality of selected ~~space-apart~~
non-contiguous sets of image pixels of the
enrollment biometric data stored on the magnetic
storage medium of the token to determine if the
token holder is the authorized token user.

16. (Currently amended) The method according to
Claim 15, wherein capturing the biometric images comprises
using a biometric sensor having a sensing area; and wherein
selecting the plurality of ~~space-apart~~ non-contiguous sets of
image pixels comprises selecting a reference set of image
pixels based upon a predetermined location on the sensing
area, and selecting at least one other set of image pixels a
predetermined distance from the predetermined location.

17. (Original) The method according to Claim 15,
wherein capturing the biometric images comprises capturing
multiple biometric images until a preferred biometric image is
captured based upon an image quality threshold.

18. (Canceled).

19. (Original) The method according to Claim 15,
wherein the biometric information is based upon a fingerprint;
and wherein capturing the biometric images comprises capturing
the biometric images using a fingerprint sensor.

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20. (Original) The method according to Claim 15, wherein the magnetic storage medium comprises a magnetic stripe having three tracks in accordance with the ISO/IEC 7810 and 7811 standards; and wherein storing the enrollment biometric data comprises storing the biometric data on the third track.

21. (Currently amended) A system for regulating the use of a token, the token comprising at least one of an access card, credit card, debit card, frequent flyer card, driver's license card, identification card and smart card, and including at least a magnetic storage medium thereon, the system comprising:

- an authorized token user enrollment unit including
 - a first biometric sensor device for capturing a first biometric image and generating therefrom first digital pixel data for a first array of image pixels,

- a first image processor for selecting a first plurality of ~~spaced-apart~~ non-contiguous sets of image pixels from the first array of image pixels, and processing respective sets of digital pixel data for the first plurality of selected ~~spaced-apart~~ non-contiguous sets of image pixels to produce enrollment biometric data, each non-contiguous set of image pixels comprising a ~~series~~ plurality of consecutive and colinear image pixels,
- and

- a first magnetic storage medium reader/writer for writing the enrollment biometric data on the magnetic storage medium of the token;

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at least one token holder verification unit for verifying the identity of a token holder presenting the token, and comprising

a second biometric sensor device for capturing a second biometric image and generating therefrom second digital pixel data for a second array of image pixels,

a second magnetic storage medium reader for reading the enrollment biometric data from the magnetic storage medium of the token, and

a comparator for comparing the second digital pixel data with the first plurality of selected ~~spaced-apart~~ non-contiguous sets of image pixels of the enrollment biometric data stored on the magnetic storage medium of the token to determine if the token holder is the authorized token user.

22. (Currently amended) The system according to Claim 21, wherein the biometric sensor device comprises a biometric sensor having a sensing area; and wherein the plurality of ~~spaced-apart~~ non-contiguous sets of image pixels comprises a reference set of image pixels based upon a predetermined location on the sensing area, and at least one other set of image pixels a predetermined distance from the predetermined location.

23. (Original) The system according to Claim 21, wherein the biometric sensor devices each comprise an image quality determination unit for determining the quality of captured biometric images.

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24. (Canceled).

25. (Original) The system according to Claim 21, wherein the biometric information is based upon a fingerprint; and wherein the biometric sensor devices each comprise a fingerprint sensor.

26. (Original) The system according to Claim 25, wherein the biometric sensor device further comprises a finger slide adjacent the fingerprint sensor.

27. (Original) The system according to Claim 26, wherein the finger slide further comprises finger guides and a finger stop.

28. (Original) The system according to Claim 21, wherein the magnetic storage medium comprises a magnetic stripe having three tracks in accordance with the ISO/IEC 7810 and 7811 standards; and wherein the magnetic storage medium reader/writer writes the enrollment biometric data on the third track.

29. (Currently amended) A device for storing biometric information on a token comprising a magnetic storage medium, the device comprising:

a biometric sensor device for capturing a biometric image and generating therefrom digital pixel data for an array of image pixels;

an image processor for selecting a plurality of ~~spaced apart~~ non-contiguous sets of image pixels from the array of image pixels, and processing respective sets of

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digital pixel data for the plurality of selected ~~spaced-apart~~
non-contiguous sets of image pixels to produce enrollment
biometric data, each non-contiguous set of image pixels
comprising a ~~series~~ plurality of consecutive and colinear
image pixels; and

a magnetic storage medium reader/writer for writing
the enrollment biometric data on the magnetic storage medium
of the token.

30. (Currently amended) The device according to
Claim 29, wherein the biometric sensor device comprises a
biometric sensor having a sensing area; and wherein the
plurality of ~~spaced-apart~~ non-contiguous sets of image pixels
comprise a reference set of image pixels based upon a
predetermined location on the sensing area, and at least one
other set of image pixels a predetermined distance from the
predetermined location.

31. (Canceled).

32. (Original) The device according to Claim 29,
wherein the biometric information is based upon a fingerprint;
and wherein the biometric sensor device comprises a
fingerprint sensor.

33. (Original) The device according to Claim 32,
wherein the biometric sensor device further comprises a finger
slide adjacent the fingerprint sensor.

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34. (Original) The device according to Claim 33, wherein the finger slide comprises finger guides and a finger stop.

35. (Original) The device according to Claim 29, wherein the magnetic storage medium comprises a magnetic stripe having three tracks in accordance with the ISO/IEC 7810 and 7811 standards; and wherein the magnetic storage medium reader/writer writes the enrollment biometric data on the third track.

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